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May 18, 2001
Project No. 6109A-01

Mr. John J. O'Grady
Remedial Project Manager
Superfund Division (SR-6J)
U.S. Environmental Protection Agency Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590

Response to Comments
Engineering Evaluation/Cost Analysis Work Plan
Fansteel Inc.
North Chicago, Illinois Facility

Dear Mr. O'Grady:

This document was prepared by Earth Sciences Consultants, Inc (Earth Sciences) on behalf of Fansteel Inc. (Fansteel) to address the U.S. Environmental Protection Agency's (USEPA) May 8, 2001 comments regarding the Engineering Evaluation/Cost Analysis (EE/CA) Work Plan for the Fansteel North Chicago, [illegible] facility. The EE/CA Work Plan, along with the associated Quality Assurance Project Plan and [illegible] and Safety Plan, were forwarded to the USEPA on March 28, 2001. As you are aware, those documents were submitted in accordance with the September 21, 2000 Administrative Order issued by the USEPA Region V.

The Work Plan describes the proposed scope of work for completing the EE/CA as well as implementing a supplemental site characterization program. As stated in the Work Plan, the ultimate objective of the EE/CA will be to obtain and evaluate the comprehensive environmental database for the Fansteel facility and adjacent properties in order to identify an appropriate remedial strategy. In accordance with the USEPA's May 14, 2001 letter that approved the EE/CA Work Plan contingent upon the incorporation of USEPA's comments, Fansteel intends to: 1) include the following responses to USEPA's comments as an addendum to the EE/CA Work Plan; 2) proceed with the supplemental site characterization program that is tentatively scheduled to begin on May 30, 2001; and 3) initiate preparation of the draft EE/CA report.

Responses to USEPA Comments

The primary items addressed in the following responses include: 1) the completion of four additional test borings (TB-35, TB-36, TB-37, and TB-38) to assist in identifying and refining the location of contaminant source(s) in soils on the Fansteel property and to further delineate the contaminant plumes in on- and off-site groundwater; and 2) the continuous soil sampling of nine test borings to provide

additional data regarding the vertical and horizontal extent of contaminants in soil to assist with the Streamlined Risk Evaluation (SRE) and future remedial actions. Comprehensive responses have also been provided for each of USEPA's secondary concerns regarding the EE CA Work Plan. The following paragraphs present responses to each of USEPA's EE CA Work Plan comments.

General Comments

1. **Comment:** Additional soil sampling and characterization is required to address data gaps. These gaps were identified in U.S. EPA and TN&A's comments on the Draft Site Investigation Report and Final Site Investigation Report for Fansteel, Inc.

   Response: Comments generated by USEPA and T N & Associates, Inc. (TN&A) for the Draft Site Investigation Report and the Final Site Investigation Report were reviewed and incorporated into the responses provided in this letter.

2. **Comment:** In identifying the Chemicals of Concern (COC), all chemicals present on-site require consideration.

   Response: All chemicals detected in media at the site, both in past investigations as well as the upcoming EE/CA investigation, will be evaluated in the SRE. (See Response to Specific Comment No. 15.)

3. **Comment:** Approach described for SRE needs verification from U.S. EPA. A meeting with U.S. EPA risk assessor is necessary.

   Response: The approach for conducting the SRE is based on USEPA and Illinois Environmental Protection Agency (IEPA) established procedures. A telephone conference will be arranged with appropriate USEPA personnel to discuss this issue in detail.

4. **Comment:** The SRE should include groundwater receptor protective of future drinking water resources.

   Response: Future drinking water receptors will be included in the SRE. (See Response to Specific Comment No. 17.)

Specific Comments

1. **Comment: Page 4, Section 3.4 Site Investigation Report, 1st bulleted Item: "The HWMU TCE soil plume does not appear to extend onto the Vacant Lot Site"**

   As part of the EE/CA investigations, soil sampling is necessary on the Vacant Lot Site to verify soil contamination due to HWMU. The conclusions in the final Site Investigation Report (Section 7.10) do not address off site soil contamination due to HWMU. The soil boring conducted for installation of monitoring well by Carlson on Vacant Lot Site west of HWMU (GP-28) has elevated levels of organic contamination (final Site Investigation Report Table One: Soil Results-VOCs).

   Response: One additional boring has been incorporated into the EE/CA subsurface investigation program to address potential off-site soil contamination on the Vacant Lot Site associated with the Hazardous Waste Management Unit (HWMU). Specifically, supplemental Boring TB-35 has been

added at the location indicated in Figure 1. This boring is situated in proximity to the western property boundary (west of existing boring GP-28 MW-4) because contaminant migration in soils is not expected to be extensive and because the EE CA for the Vacant Lot Site involved a substantial soil removal action. Boring TB-35 will be advanced using Geoprobe® methods as described in the EE/CA Work Plan. Also, groundwater samples will be collected from this boring and analyzed per the EE/CA Work Plan.

Continuous soil samples will be collected from Boring TB-35 at 4-foot intervals, and submitted for laboratory analysis. Continuous sampling will assist in defining the vertical extent of contaminated soils for the SRE and subsequent remedial actions. Soil samples will be analyzed for VOCs (USEPA Method 8260), total metals (cadmium, lead, and tantalum), and semivolatile organic compounds (SVOC) (polynuclear aromatic hydrocarbons [PNAs] only by USEPA Method 8310).

2. **Comment: Page 5, Section 3.5 Identification of Data Gaps, last bulleted item: "Additional soil data are not needed to complete the Fansteel EE/CA, and previously collected data will be sufficient"**

Additional data are required to address soil data gaps. The additional data gap samples collected should be analyzed for metals, VOCs, and SVOCs.

Response: Refer to the responses for the specific items listed below.

A) **Comment:** During site investigation activities (Final Site Investigation Report page 6-1, section 6.2, Field Observations), slag-type and fly-ash types of materials were observed but not sampled. This fill material and its characteristics must be evaluated through quantitative chemical analysis.

Response: According to information provided in the Site Investigation Report, the slag and fly ash type materials appear to be sporadically distributed throughout the site and were identified in borings previously completed within Chemical Building A, Metallurgical Building A, and in the vicinity of the boiler house. An attempt will be made to collect a maximum of three samples of this material from different locations if encountered in the proposed borings. The samples will be submitted for laboratory analysis of VOCs (USEPA Method 8260), total metals (cadmium, lead, and tantalum), and SVOCs (PNAs only by USEPA Method 8310). The borings from which these samples are obtained will be determined in the field based on: 1) the presence of slag/fly ash material in a volume sufficient for discrete sampling; and 2) boring locations with respect to adequate areal representation.

B) **Comment:** Samples submitted for laboratory analysis were based on PID field screening results. Data gaps remain because several boring depths were not sampled (ex. GP-28 boring has contamination at 8-10 feet depth interval and does not show contamination in the next sampled interval of 16-18 feet depth). Evaluation of these data gaps through chemical analysis of samples is important not only for remedial volume estimates but also for streamlined risk evaluation (SRE) where the depth of prevailing contamination is crucial.

Response: Four broad areas of concern have been identified and include the HWMU area, the vicinity of Monitoring Wells MW-8 and MW-9 within the southwest corner of the property, the parking lot area south of the warehouse, and in the vicinity of Chemical

Building A. To address the type of data gaps referenced above, soils will be continuously sampled from nine borings. These borings were selected based on soils analytical data contained in the Site Investigation Report and include the following:

HWMU Area

- TB-14 - This boring is located in the central portion of the estimated groundwater contaminant plume for the HWMU area. Although the quantity of VOC data from adjacent Site Investigation borings are sufficient, there appear to be gaps in the PNAs and metals data.

- TB-35 – This boring is located off site in the vicinity of existing Boring GP-28 and is primarily intended to assist in defining the magnitude and extent of any potential off-site soil plume.

Southwest Property Corner

- TB-2 – Identification of a potential contaminant source associated with the former degreaser area which is hydraulically upgradient of existing Monitoring Well MW-8.

- TB-26 – Delineation of the extent of off-site soil contamination.

- TB-37 – Assessment of the extent of soil contamination east of existing affected Boring GP-21.

- TB-3[illegible] ther delineation of the contaminant source area hydraulically [illegible]sting Monitoring Well MW-9.

Parking Lot Area

- TB-4 – Evaluation of the extent of soil contamination west of existing affected Boring GP-3.

- TB-7 – Evaluation of the extent of soil contamination south of existing affected Boring GP-3.

Chemical Building A

- TB-[illegible] nt of the extent of soil contamination west of existing affected Bor[illegible]g GP-[illegible]

Soil samples from the previously identified borings will be collected and analyzed according to the methods described for additional Boring TB-35 in Comment No. 1. Soils analytical data from these borings, in conjunction with the soils data provided in the Site Investigation Report and the Vacant Lot Site EE/CA and remedial action documents, will provide

sufficient horizontal and vertical delineation of constituents in on- and off-site soils. Groundwater samples will also be collected from each of the borings identified above to provide a refined definition of the groundwater contaminant plumes. All other proposed borings will serve for the primary purpose of groundwater characterization with soil field screening only.

C) **Comment:** The area around boring GP-37 is not characterized. Investigation and soil chemical analysis is necessary to identify the source of groundwater contamination in monitoring wells MW-8 and MW-9. This investigation is also necessary for the SRE.

Response: Two additional borings (TB-37 and TB-38) have been incorporated into the EE/CA subsurface investigation program to assist in identifying contaminant source(s) within the Metallurgical B Building. The locations of these borings are depicted in Figure 1. Due to the inclusion of these two borings, the location of proposed Boring TB-1 was shifted slightly to the west (within the Metallurgical A Building). Additional Borings TB-37 and TB-38, along with Boring TB-2, will provide soils analytical data for identifying potential source areas hydraulically upgradient of existing Monitoring Wells MW-8 and MW-9 and Boring GP-37. Each of the two new borings will be advanced using Geoprobe® methods as described in the EE/CA Work Plan. Also, groundwater samples will be collected from these borings and analyzed per the EE/CA Work Plan.

Soil samples from Borings TB-37 and TB-38 will be collected and analyzed according to the methods described for Boring TB-35 in Comment No. 1.

3. **Comment: Page 5, Section 2.5 Identification of Data Gaps, last paragraph: "Also for purposes of evaluation the possibility of an external source area east of the Fansteel property .... groundwater samples be collected upgradient on the R. Lavin & Sons property..."**

If access is not given, groundwater samples at the perimeter of Fansteel property should be considered.

Response: Efforts have been initiated to secure approval for accessing the R. Lavin & Sons property. Regardless of the result of these efforts, however, the EE/CA Work Plan proposes that groundwater samples be collected and analyzed from existing Wells MW-1 and MW-2 and from proposed Test Boring TB-19 that are located along the property boundary between the Fansteel and R. Lavin & Sons facilities.

4. **Comment: Page 10, Section 5.2.1.1 Geoproge® Borings, Off site, 1st bulleted item: "Six borings within the Vacant Lot Site downgradient of the HWMU source area (Borings TB-20 through 25)"**

A test boring to the west of GEO-7 and another to the south of TB-20 would help define the boundary of HWMU plume in this area.

Response: One additional boring has been incorporated into the EE/CA subsurface investigation program to assist in defining the HWMU groundwater plume on the Vacant Lot Site. Specifically, supplemental Boring TB-36 has been added west of existing Monitoring Well GEO-7 at the location depicted in Figure 1. In addition, proposed Boring TB-23 has been relocated to the south of proposed

Boring TB-20 to provide further plume definition in this area. Due to the repositioning of Boring TB-23, the location of proposed Boring TB-24 was shifted slightly to the northwest to provide a sufficient configuration for groundwater plume definition in this area. The addition of Boring TB-36, the relocation of Boring TB-23, and the addition of Boring TB-35 as described in Comment No. 1, will provide a refined delineation of the groundwater plume on the Vacant Lot Site and hydraulically downgradient of the HWMU. Supplemental Boring TB-36 will be advanced using Geoprobe® methods as described in the EE/CA Work Plan. Also, groundwater samples will be collected from this boring and analyzed per the EE/CA Work Plan.

5. **Comment: Page 10, Section 5.2.1.1 Geoprobe® Borings, On site, 1st bulleted item: "Two borings within Metallurgical Buildings A and B for confirmation of the groundwater plume estimated in this area by Carlson (Borings TB-1 and TB-2)"**

   Refer to comment 2.C above. As part of this EE/CA investigation, the source(s) contributing to MW-8 and MW-9 groundwater contamination needs to be identified. Additional borings in Metallurgical Buildings A and B and their chemical analysis is necessary.

   Response: Refer to the response for Comment 2 (C).

6. **Comment: Page 12, Section 5.2.2.1 Soil Sampling for Chemical Analysis.**

   Earlier comments on additional sampling and chemical analysis are applicable here. Composite sampling is not an approved method of sample collection for VOC analysis.

   Response: The EE/CA Work Plan did not propose VOC analysis for soil samples. The composite soil samples were intended for total organic carbon, moisture content, and cation exchange capacity analyses necessary for the SRE work.

   Considering that soil samples collected from several borings will now be analyzed for VOCs, these samples will be obtained by USEPA Method 5035. Soil samples for total metals and SVOC analysis will remain as composites, however, and will be formed from 4-foot sample intervals.

7. **Comment: Page 12, Section 5.2.2.1 Soil Sampling for Chemical Analysis, 4th sentence: "Soil samples will be obtained from uncontaminated borings (near the areas of concern) based on photoionization detector measurements so that analytical results reflect intrinsic soil conditions"**

   Explanation is required as to why samples will be collected from uncontaminated borings.

   Response: Fate and transport modeling associated with the SRE require an understanding of unaffected (e.g., intrinsic) soil conditions both from a chemical and geotechnical perspective. Chemical and geotechnical parameters related to this work are identified in Section 5.3 of the EE/CA Work Plan.

8. **Comment: Page 12, Section 5.2.2.1 Soil Sampling for Chemical Analysis, 5th sentence: "Soil samples will be composited using a stainless steel pail and dedicated plastic soil scoops prior to placement into the laboratory container"**

Refer to SOPs for collecting VOC samples. Stainless steel instead of plastic scoops is appropriate.

Response: The EE/CA Work Plan did not propose VOC analysis for soil samples. The composite soil samples were intended for total organic carbon, moisture content, and cation exchange capacity analyses associated with the SRE.

Considering that soil samples collected from several borings will now be analyzed for VOCs, these samples will be obtained by USEPA Method 5035. Soil sample collection for total metals and SVOC analysis will remain as proposed in the EE/CA Work Plan.

9. **Comment: Page 14, 1st complete paragraph.**

Samples have to be preserved onsite. This will ensure sample stability.

Response: For analytes requiring preservation, sample containers will receive an appropriate amount of preservative that will be added by the laboratory prior to shipment to the site. Therefore, all groundwater samples will be preserved immediately upon collection.

10. **Comment: Page 15, Section 5.2.7 Investigation Derived Wastes Management Procedures.**

All decontamination water generated from nondedicated sampling equipment should also be addressed in this section.

Response: Wastewater generated from the decontamination of nondedicated sampling equipment will be containerized in 55-gallon steel drums along with purge water and excess sample volume.

11. **Comment: Page 16, 1st incomplete paragraph: "Upon completion of field investigations, Fansteel will temporarily stage the drums at an appropriate area on site pending implementation of the approved remedial action"**

Sampling and analysis is necessary in a timely manner to characterize IDW and meet applicable state or local requirements regarding on site storage.

Response: Liquid and solid wastes will be placed into labeled 55-gallon steel drums at each boring or well location immediately following generation. Following the completion of field activities, drummed wastes will be securely transported to and temporarily staged within the Warehouse structure located in the southeastern portion of the Fansteel property. Inside the Warehouse, drums will be placed on a containment pad that will be constructed of a wooden frame overlain by heavy gauge sheet plastic. The wastes will subsequently be disposed in accordance with federal, state, and local requirements during implementation of the final site remedy.

12. **Comment: Page 16, Section 5.3 Analytical Program, 1st paragraph: "As previously discussed, soil samples will be collected from 5 unaffected borings near areas of concern for chemical analysis associated with the SRE work"**

The rationale for collecting unaffected boring sample for chemical analysis and SRE is not clear. Further explanation is needed.

Response: Fate and transport modeling associated with the SRE require an understanding of unaffected (e.g., intrinsic) soil conditions both from a chemical and geotechnical perspective. Chemical and geotechnical parameters related to this work are identified in Section 5.3 of the EE/CA Work Plan.

13. **Comment: Page 17, Section 5.3 Analytical Program, Soil (chemical analyses):**

Analyses for metals, VOCs, and SVOCs in soil is necessary for areas that have been identified in the previous comments. These are areas which have not been sampled before (and where contamination in nearby borings have been identified). The detection levels for these compounds should meet TACO action levels.

Response: Select soil samples obtained from the borings listed under comment 2 (B) will be analyzed for VOCs (USEPA Method 8260), total metals (cadmium, lead, and tantalum), and SVOCs (PNAs only by USEPA Method 8310). The detection levels for these compounds will meet TACO action levels.

14. **Comment: Page 17 Soil (chemical analyses), 1st bulletin item: "Duplicate samples – One duplicate per very 10 samples submitted for analysis (TOC, moisture content, and cation exchange capacity)"**

Metals, VOCs, and SVOCs should also be included in the duplicate sample analyses.

Response: The EE/CA Work Plan did not propose metals, VOCs, or SVOCs analysis for soil samples and, therefore, no duplicate samples were specified for these constituents. Soil samples were proposed only for total organic carbon, moisture content, and cation exchange capacity analyses necessary for the SRE. Considering that soil samples will now be analyzed for metals, VOCs, and SVOCs (PNAs), duplicate samples will be collected.

15. **Comment: Page 19, Section 6.1 Streamlined Risk evaluation, 2nd sentence: "the purpose of the SRE will be to estimate possible risks of adverse effects to human health.....as a result of exposures to COCs related to Fansteel's historical operations"**

All COCs present on the site should be identified based on their presence and concentration. An industrial worker conducting excavation activities will be exposed to all chemicals present in soils irrespective of their origin.

Response: All chemicals detected in media at the site, both in past investigations as well as the upcoming EE/CA investigation, will be evaluated in the SRE. Essentially, the evaluation will be done using a two-tiered approach. First, a conservative initial screening to determine COC will be conducted by comparison of maximum detected concentrations (for every chemical detected at least once in each medium) with IEPA and other appropriate USEPA (e.g., Region III) residential and industrial risk-based concentrations, as well as appropriate standards/criteria. At least one exceedence of a screening criterion/standard by a chemical will result in that chemical being retained as a COC. In addition to comparisons with screening criteria/standards, other COC selection criteria will include an evaluation of concentration, prevalence, toxicological properties and classifications, and mobility and persistence in the environment.

In the second tier, alternate concentration limits will be derived for all COCs identified in each environmental medium to be protective of all likely receptors, which will include industrial and construction workers performing excavation activities. All COCs will be evaluated, regardless of origin. Some COCs (primarily, some metals) could be identified, for example, as a result of background or impacts from an upgradient source(s) in the SRE; however, such COCs (if any) will still be carried through the entire risk evaluation process. Rationale for attributing the presence of those COCs to background or other sources will be provided. However, in the final analysis, it will be highly unlikely that background COCs will drive remediation objectives and costs for Fansteel, and non-site-related COCs will be addressed separately from site-related COCs. It should also be noted that remediation to below background levels would be unreasonable, and most likely not feasible.

16. **Comment: Page 19, Section 6.1 Streamlined Risk evaluation, 5th sentence: "Off-site media of interest for this SRE include groundwater...on the Fansteel property"**

SRE should also include off site soil media where USEPA has not conducted a remedial action. These areas could be identified from historical investigations, Fansteel's Site Investigation Report and from additional sampling during EE/CA investigation.

Response: In order to address this comment, Earth Sciences, on behalf of Fansteel, has requested information from USEPA Region V that would indicate actual area(s) where soil remediation was conducted by the USEPA on the Vacant Lot Site.

17. **Comment: Page 23, Section 6.1.3 Exposure Assessment and the Derivation of Risk-Based Cleanup Levels, 3rd paragraph:**

Groundwater receptor should be included in the SRE. The Vacant Lot EE/CA has considered remediating groundwater contamination using the presumptive remedy for trichloroethene (TCE). Since an off-site groundwater contamination source was present (in addition to an on-site source), this presumptive pump and treat remedy was not implemented due to a concern that more contamination would migrate from Fansteel on to Vacant Lot Site. The U.S. EPA has conducted a removal action to eliminate the on-site source contributing to the groundwater contamination at MW-3 and GMMW-2 locations on Vacant Lot. Illinois state regulations pertaining to groundwater evaluation include Illinois Administrative Code (IAC) Title 35 Part 742 Subpart H Tier 2 Groundwater Evaluation.

Response: Future drinking water receptors will be included in the SRE. ACLs will be derived for the protection of those receptors at the downgradient Fansteel property boundary. However, it should be noted that due to the urbanized setting of the site, and the fact that probably all residents and businesses may be supplied with public water, those ACLs may or may not be selected as remedial objectives for groundwater. All necessary supporting information (e.g., possible ordinances restricting or prohibiting groundwater use and/or well surveys) will be provided in the SRE.

We anticipate that the above responses have adequately satisfied each of USEPA's concerns regarding the scope of work proposed in the EE/CA Work Plan. As previously discussed, this document will be included as an addendum to the EE/CA Work Plan. Also, in accordance with the USEPA's May 14, 2001 letter that approved the EE/CA Work Plan contingent upon the incorporation of USEPA's comments, we have tentatively scheduled the fieldwork to begin on May 30, 2001 and will begin preparation of the draft EE/CA report in order to meet the July 12, 2001 deadline for submittal of the draft report. If you have any questions or require additional information, please contact us.

Respectfully submitted,

Robert D. Breakwell, P.G.
Project Manager

M. David Tourdot
Executive Vice President

Scott C. Blauvelt, P.G.
President

RDB/MDT/SCB:tls

Enclosure

cc: J. Jackson (Fansteel)
T. Krueger (USEPA Region V)
M. Mocniak (Fansteel)
J. Munie (IEPA)
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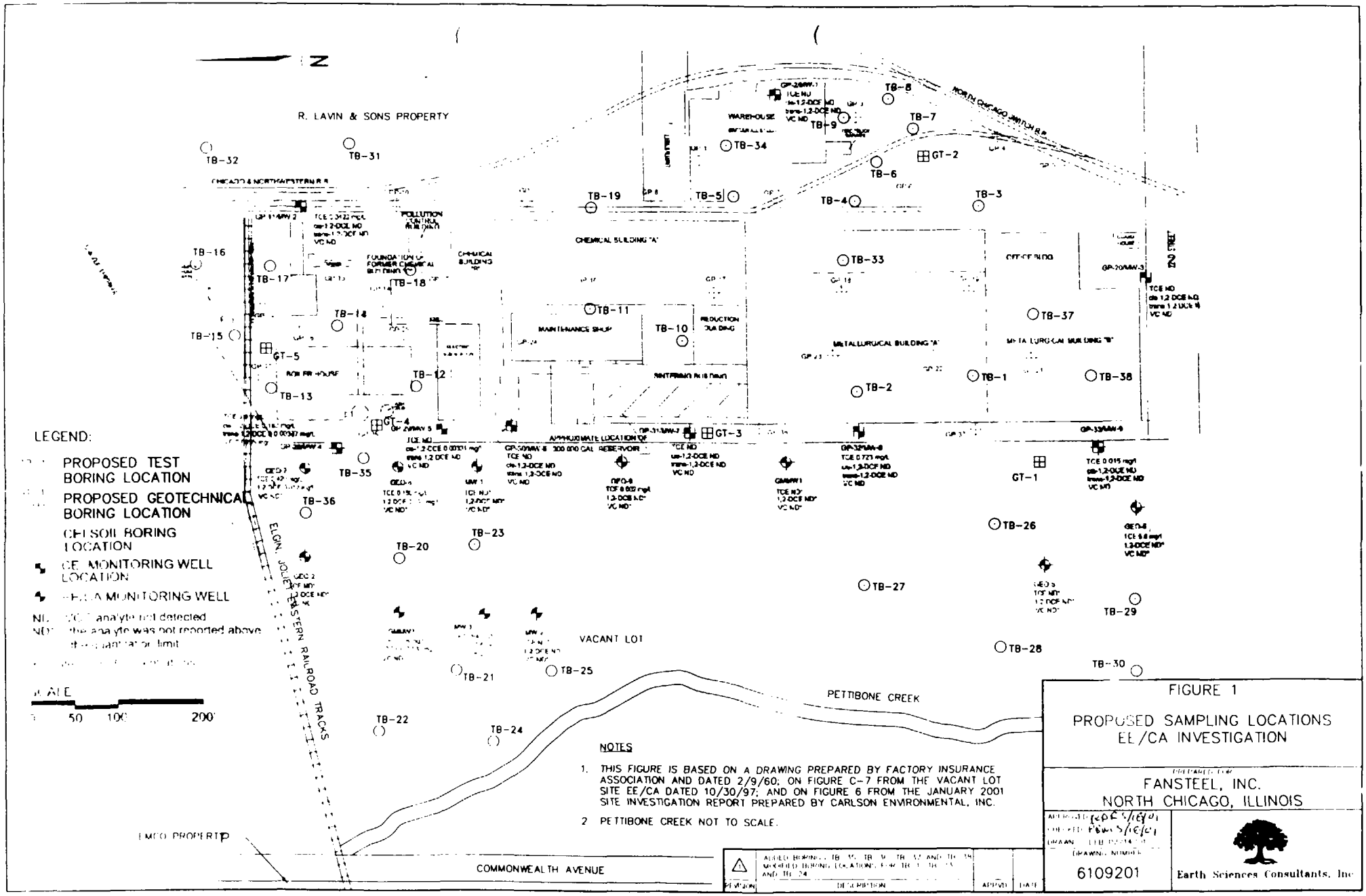
R. LAVIN & SONS PROPERTY
WAREHOUSE
CHEMICAL BUILDING "A"
MAINTENANCE SHOP
METALLURGICAL BUILDING "A"
METALLURGICAL BUILDING "B"
OFFICE BLDG.
APPROXIMATE LOCATION OF 300,000 GAL. RESERVOIR
VACANT LOT
ELGIN, JOLIET & EASTERN RAILROAD TRACKS
PETTIBONE CREEK
COMMONWEALTH AVENUE
EMCO PROPERTY
LEGEND:
PROPOSED TEST BORING LOCATION
PROPOSED GEOTECHNICAL BORING LOCATION
CH SOIL BORING LOCATION
GE MONITORING WELL LOCATION
EE/CA MONITORING WELL
ND: analyte not detected
NDV: the analyte was not reported above the quantitation limit
SCALE
0 50 100 200
NOTES
1. THIS FIGURE IS BASED ON A DRAWING PREPARED BY FACTORY INSURANCE ASSOCIATION AND DATED 2/9/60; ON FIGURE C-7 FROM THE VACANT LOT SITE EE/CA DATED 10/30/97; AND ON FIGURE 6 FROM THE JANUARY 2001 SITE INVESTIGATION REPORT PREPARED BY CARLSON ENVIRONMENTAL, INC.
2. PETTIBONE CREEK NOT TO SCALE.
REVISION
DESCRIPTION
APPVD
DATE
FIGURE 1
PROPOSED SAMPLING LOCATIONS
EE/CA INVESTIGATION
PREPARED FOR
FANSTEEL, INC.
NORTH CHICAGO, ILLINOIS
DRAWING NUMBER
6109201
Earth Sciences Consultants, Inc.